Remarks

The specification and claim 31 have been editorially amended as shown above. Following entry of this amendment, claims 1-41 will be pending in this application. No claims have been allowed.

Rejection of claims 1-10, 19-31 and 38-41 under 35 U.S.C. §103(a)

Claims 1-10, 19-31 and 38-41 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,649,175 (Inoue et al.) in view of U.S. Patent No. 5,817,722 (Yezrielev et al.) on grounds, *inter alia,* that:

> ***"Regarding claims 1, 5-6, 9, 31, 39, 40**: Inoue teaches an alkyd resin coating composition comprising a reaction product of a polyester and a fatty acid using a crosslinking agent (Col. 1, lines 64-68 and col. 2, lines l-4).*
>
> *"Inoue is silent as to the molecular weight and polydispersity of the resin. However, Yezrielev teaches a polyesterdiol preparation having a narrow molecular weight distribution of c 1.4 (col. 4, lines 15-30). Inoue does not specify residual volatile levels. However, Yezrielev teaches a process that produces a polyesterdiol having a volatiles level of < 4 weight percent (col. 4, lines 45-49). Inoue does not specify molecular weights. However, Yezrielev teaches a polyester poloyol structure (col 4, line 18) where R = hexyl, R_1 = terephthalic acid and n=2 . This compound has a molecular weight of about 604. Inoue does not specify viscosity or solids content. However, Yezrielev teaches a process that produces a polyesterdiol having a viscosity e 3500 cps col. 10, lines 16-1 8) and >96 wt, % solids (col. 10, lines 1 1-1 5). Inoue and Yezrielev are analogous art since they both are from the same field of endeavor, namely polyester and alkyd resin synthesis. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the process of Yezrielev for synthesizing polyesterpoylols in the alkyd composition of Inoue to produce alkyd resins with a high solids content and low volatiles."* (see the Office Action at pages 2-3, emphasis in original).

Reconsideration is requested. Applicants agree that Inoue et al. are silent regarding the molecular weight and polydispersity of their resin, and silent regarding residual volatile levels and viscosity. However, Inoue et al.'s alkyd resin coating composition is more complicated than the description in the Office Action. Inoue et al. react together a polybasic acid (see e.g., col. 3, lines 21), a difunctional or trifunctional alkanolamine (see e.g., col. 3, lines 27-38), an optional polyhydric alcohol (see e.g., col. 3, lines 26-27 and 38-51) and an optional fatty acid (see e.g., col. 3, lines 52-68). The nitrogen-containing alkanolamine is a required ingredient in Inoue et al.'s reaction mixture. Nitrogen apparently is desired to provide an alkyd resin which will more readily be absorbed on the surface of pigment particles including carbon black particles (see e.g., col. 2, lines 28-36).

Inoue et al. say at col. 3, lines 52-67 that their nitrogen-containing alkyd resins may be modified with fatty acids, and list 17 such acids. Inoue et al. do not discuss saturated and unsaturated fatty acids *per se*, but do say that they prefer "drying or semidrying vegetable oil fatty acids" (see e.g., col. 3, lines 65-66). Persons having ordinary skill in the art are aware that drying oils are characterized by high levels of polyunsaturated fatty acids and that the iodine value referred to by Inoue et al. at col. 3, lines 55-57 is a measure of the number of double bonds available for reaction with iodine. If asked to consider the matter, a person having ordinary skill in the art would conclude that Inoue et al. do not provide any basis for selecting substantially saturated fatty acids in preference to unsaturated fatty acids, and actually teach away from the use of substantially saturated fatty acids. If asked to consider the matter, a person having ordinary skill in the art would also realize that Inoue et al.'s working examples use only extensively unsaturated fatty acids, *viz.*, tall oil fatty acid (Preparation Example 1), linseed oil fatty acid (Preparation Example 2) and soybean oil fatty acid (Preparation Example 1 and Comparison Example 1).

Applicants point out (see e.g., applicants' paragraph 0019) that unsaturated fatty acids such as those naturally occurring in castor, tall, linseed, soybean, coconut, palm, and safflower oils are less preferred where yellowing is a concern. This is further illustrated in applicants' Examples 4, 5 and Table 6b which compare rebaking color results for a comparison coating composition made using an epoxidized unsaturated oil (EPOXOL™ 9-5, see Example 3 for preparation of the coating composition and Example 4 for preparation

of the coated substrate) and a coating composition of the invention made using a substantially saturated fatty acid (palmitic acid, see Example 1 for synthesis of the alkyd resin, Example 2 for preparation of the coating composition and Example 5 for preparation of the coated substrate). As shown in Table 6b and further explained in paragraph 0040, the comparison composition used in Example 4 exhibited a +1.12 Δb change on rebaking, whereas the inventive composition used in Example 5 exhibited only a +0.6 Δb change on rebaking. Inoue et al. provide no such teaching.

Yezrielev et al.'s polyesterdiols are polymers, not monomers. No showing has been made that a person having ordinary skill in the art would substitute Yezrielev et al.'s polyesterdiol polymers for any of the monomeric reactants (e.g., the polyhydric alcohol) Inoue et al. employ to make their alkyd resins. Because the reaction mixture would moreover presumably also employ at least Inoue et al.'s polybasic acid and difunctional or trifunctional alkanolamine, the molecular weight and polydispersity of the eventual product would be different from that of the starting polyesterdiol polymer, with both the molecular weight and polydispersity presumably increasing. If asked to consider the matter, a person having ordinary skill in the art would assume that the resulting reaction product would have significantly increased molecular weight and viscosity, and indeed might form a solid rather than a liquid. A person having ordinary skill in the art would not substitute Yezrielev et al.'s polyesterdiol polymers for one of Inoue et al.'s monomeric reactants, and would not in any event expect to obtain an alkyd resin having a "polydispersity of less than about 2" as recited in applicants' rejected independent claims 1 and 31 or an alkyd resin having a "number average molecular weight between about 500 and 2,000" as recited in claim 31.

Yezrielev et al.'s polyesterdiol polymers also would not be substituted for Inoue et al.'s alkyd resin as a whole. Yezrielev et al.'s polyesterdiol polymers are not said to contain nitrogen and accordingly lack a component required by Inoue et al. Also, Yezrielev et al. do not say to form their polyesterdiols from a fatty acid, let alone a substantially saturated fatty acid (see e.g., col. 7, lines 36-63). If asked to consider the matter, a person having ordinary skill in the art who reviewed Inoue et al. would not replace Inoue et al.'s alkyd resins with Yezrielev et al.'s polyesterdiol polymers, and would not in any event expect to obtain an alkyd resin that is "the reaction product of a polyester component and a substantially

saturated fatty acid component" as recited in applicants' rejected independent claim 1, nor an alkyd resin that is the "reaction product of a difunctional acid and a polyol, and a fatty acid component, wherein the fatty acid component is substantially saturated and naturally occurring" as recited in applicants' rejected independent claim 31.

Applicants accordingly request withdrawal of the 35 U.S.C. §103(a) rejection of claims 1, 5-6, 9, 31, 39 and 40 as being unpatentable over Inoue et al. in view of Yezrielev et al.

The Office Action also asserted that:

> ***"Regarding claims 24 and 26-28****: Inoue is silent as to a sulfonic acid catalyst, reactive diluent, waxes and flow control agents. However, Yezrielev teaches a reactive epoxy compound (col. 9, lines 56-61), a p-toluenesulfonic acid catalyst (cot. 8, lines 63-67) and other additives common to paint formulations such as silcone and fluorocarbon flow control agents and the like (col. 14, lines 56-61). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the process of Yezrielev for synthesizing polyesterpoylols in the alkyd composition of Inoue to produce alkyd resins with a high solids content , low volatiles and low acid numbers."* (see the Office Action at page 3, emphasis in original).

Reconsideration is requested. Regarding rejected claim 24, the cited Yezrielev et al. passage at col. 9, lines 56-61 says that small amounts of an epoxy compound may be added during the polyesterdiol synthesis to "form ester groups with free carboxylic acid groups, thereby assisting in achieving the these low acid numbers". The described reaction would consume the epoxy functionality in the epoxy compound. The product would not be an alkyd resin-containing coating composition "further comprising a reactive diluent, wherein the reactive diluent comprises an epoxy material" as recited in rejected claim 24.

Regarding rejected claim 26, the cited Yezrielev et al. passage at col. 14, lines 56-61 says that Yezrielev et al.'s compositions "may also contain other additives which are conventionally used in paint and coating compositions such as flow control (anti sag) agents, e.g., silicones, fluorocarbons or cellulosics; flatting agents; wetting agents; UV stabilizers; anti-foaming agents; fungicides and the like". Yezrielev et al. do not disclose making an

alkyd resin-containing coating composition that further comprises a "wax selected from the group consisting of: carnauba, petrolatum, and polyethylene" as recited in rejected claim 26.

Regarding rejected claim 27, applicants rely on their arguments shown above concerning claim 1 from which claim 27 depends.

Regarding rejected claim 28, the cited Yezrielev et al. passage at col. 8, lines 63-67 says that a variety of catalysts including p-toluenesulfonic acid may be employed in Yezrielev et al.'s esterification reaction. However, Yezrielev et al. then say at col. 9, lines 6-10 that:

> *"Where a catalyst is employed in the esterification reaction, it must be substantially removed from the polyesterdiol reaction product prior to stripping excess diol from the product. Sufficient catalyst should be removed such that the resulting product contains less than catalytic quantities of residual catalyst."*

Yezrielev et al. accordingly do not disclose making an alkyd resin-containing coating composition "further comprising a catalyst selected from the group consisting of: paratoluene sulfonic acid, and dodecylbenzene sulfonic acid" as recited in rejected claim 28.

Applicants accordingly request withdrawal of the 35 U.S.C. §103(a) rejection of claims 24 and 26-28 as being unpatentable over Inoue et al. in view of Yezrielev et al.

The Office Action also asserted that:

> ***"Regarding claims 2-4 and 29-30**: Inoue teaches curing by baking the coating at temperatures between 100-200°C (col. 5, lines 47-49). Inoue does not expressly teach color values or flexibility measurements. However, these properties would be inherent in the composition as claimed. The Office recognizes that all of the claimed effects and physical properties are not positively stated by the reference. Note however, that the reference teaches all of the claimed ingredients, process steps and process conditions and thus, the claimed effects and physical properties would implicitly be achieved by carrying out the disclosed process. If it is the applicants position that this would not be the case: (1)evidence would need to be presented to support applicant's position; and (2) it would be the Ofice's position that the application contains inadequate disclosure in that there is no teaching as to how to obtain the claimed*

properties and effects by carrying out only these steps." (see the Office Action at pages 3-4, emphasis in original).

Reconsideration is requested. As noted above, Inoue et al. do not discuss polydispersity, do not provide any basis for selecting substantially saturated fatty acids in preference to unsaturated fatty acids, and employ only extensively unsaturated fatty acids in their working examples. As also noted above, Yezrielev et al.'s polymers would not be used as substitutes for Inoue et al.'s monomeric reactants or for Inoue et al.'s alkyd resin as a whole. A person having ordinary skill in the art would not be enabled by Inoue et al., Yezrielev et al. or the proposed combination of Inoue et al. and Yezrielev et al. to make the coating compositions of rejected claims 2-4 or 29-30.

Applicants accordingly request withdrawal of the 35 U.S.C. §103(a) rejection of claims 2-4 and 29-30 as being unpatentable over Inoue et al. in view of Yezrielev et al.

The Office Action also asserted that:

"Regarding claims 7-8: *Inoue teaches the coating composition contains 60%-90% by weight of the alkyd resin (col. 5, line 4).*

"Regarding claim 10: *Inoue teaches the percent solids in the coating composition is about 50% (col. 6, lines 45-46).*

"Regarding claims 1-20 and 38: *Inoue teaches the alkyd resin having an acid number between 0.1 and 30 (col. 4, line 33)."*

"Regarding claims 21-23: *Inoue teaches the composition having a melamine formaldehyde resin crosslinker (col. 4, line 53) at a level between 5% and 40% by weight of the composition (col. 4, lines 6 and 7)".*

"Regarding claim 25: *Inoue teaches the solvents are xylene, alcohols and ketones (col. 5, lines 15-25)."*

"Regarding claim 41: *Inoue teaches a metal substrate coated with the alkyd resin composition (col. 7 lines 16-20)."* (see the Office Action at page 4, emphasis in original).

Reconsideration is requested. As to these claims applicants rely on their arguments given for independent claims 1 and 31.

Applicants accordingly request withdrawal of the 35 U.S.C. §103(a) rejection of claims 1-10, 19-31 and 38-41 as being unpatentable over Inoue et al. in view of Yezrielev et al.

Rejection of claims 11-18 and 32-37 under 35 U.S.C. §103(a)

Claims 11-18 and 32-37 were rejected under 35 U.S.C. §103(a) as being unpatentable over Inoue et al. in view of Yezrielev et al. as applied to claims 1-10, 19-31 and 32-37 above (applicants assume "32-37" was intended to read "38-41"), and further evidenced by coconutoil-online/FAQ.html, and on grounds (see the Office Action at pages 4-5, emphasis in original) that:

> ***"Regarding claims 11-18 and 32-37:*** *Inoue teaches the polyester components of the composition are terephthalic acid, phthalic anhydride or mixtures thereof (col. 3, lines 10-20), the polyol components of the composition are neopentyl alcohol, trimethylol propane or mixtures thereof (col. 3, lines 43-51), the fatty acid component is naturally occurring and (col. 3, lines 55-68), naturally occurring fatty acids typically are mixtures of several fatty acids evidenced by coconutoil-online.com/FAQs.html. Fatty acids can be purified to a single species by chromatography or crystallization. Alternatively, highly purified (>99%) saturated fatty acids can be purchased from a number of vendors. Typical data are shown below for the saturated fatty acid content of coconut oil (col. 3, line 63):*
>
> > *Typical fatty acid composition as follows: (analysis done by HPLC (High Performance Liquid Chromatography), an average of 5 consecutive production runs)*
> >
> > *C8 8.86 (Caprylic)*
> > *C10 6.17 (Capric)*
> > *C12* ***48.83 (Lauric)***
> > *C14 19.97 (Myristic)*
> > *C15 Traces (0.01)*
> > *C16 7.84 (Palmitic)*
> > *C18 3.06 (Stearic)*
> > *C18:2 ....0.76*
> > *C18:1 4.44*
> > *C20 0.05 (Arachidic)"*

Reconsideration is requested. The cited Internet page was printed on November 9, 2007 from the Internet at http://www.coconutoil-online.com/Fatty%20Acid%20Composition.html, is dated well after applicants' May 3, 2003 priority date and is not available as a reference. Applicants located a somewhat similar coconut oil description in an Internet Archive page dated March 31, 2002 (see http://web.archive.org/web/20021204102049/www.coconutoil-online.com/Fatty+Acid+Composition.html) and have cited it in the accompanying Supplemental Information Disclosure Statement. If this rejection is to be maintained then this older document should be substituted for the November 9, 2007 document.

The rejection should be withdrawn in any event. As noted above, Inoue et al. do not discuss polydispersity, do not provide any basis for selecting substantially saturated fatty acids in preference to unsaturated fatty acids, and employ only extensively unsaturated fatty acids in their working examples. As also noted above, Yezrielev et al.'s polymers would not be used as substitutes for Inoue et al.'s monomeric reactants or for Inoue et al.'s alkyd resin as a whole. Coconut oil is only one of the 17 fatty acids listed by Inoue et al. Coconut oil is also said by Inoue et al. to be a nondrying oil (see e.g., col. 3, line 63) and never again referred to by Inoue et al. As noted above, Inoue et al. prefer drying and semidrying oils. If asked to consider the matter, a person having ordinary skill in the art would regard coconut oil as the least desirable oil mentioned by Inoue et al. No proper basis has been provided for selecting coconut oil from amongst the 17 oils mentioned by Inoue et al. and then modifying Inoue et al. based on Yezrielev et al. in the manner proposed in the Office Action.

Applicants accordingly request withdrawal of the 35 U.S.C. §103(a) rejection of claims 11-18 and 32-37 as being unpatentable over Inoue et al. in view of Yezrielev et al. as applied to 1-10, 19-31 and 32-37 above, and further evidenced by coconutoil-online/FAQ.html.

Conclusion

Applicants have made an earnest effort to address the rejections. As acknowledged n the Office Action Inoue et al. are silent regarding polydispersity. Yezrielev et al. and the cited coconut oil Internet page would not be used to modify Inoue et al. in the manner proposed in

the Office Action. Withdrawal of the rejections and passage of the application to the issue branch are accordingly requested. The Examiner is encouraged to telephone the undersigned attorney if there any questions regarding this application or this amendment.

Respectfully submitted on behalf

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